No. 9300123

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Kansas Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, (THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, *) TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*(*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations)*

WHEAT

'Arlin'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of December in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Kansas Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
KS-SB-369-7

3. VARIETY NAME
Arlin

4 ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Waters Hall, Kansas State University
Manhattan, KS 66506

5. PHONE *(include area code)*
913-532-6147

FOR OFFICIAL USE ONLY

PVPO NUMBER
9300123

FILING Date: Feb. 3 1993

Time: ☐ A.M. ☐ P.M.

FEES RECEIVED Filing and Examination Fee: $ 2125 +200.00 Date: Feb. 3 1993, Mar 2 1993

Certificate Fee: $ 300.00 Date: 09/26/95

6. GENUS AND SPECIES NAME
Triticum aestivum

7. FAMILY NAME *(Botanical)*
Gramineae

8 CROP KIND NAME *(Common Name)*
Wheat

9. DATE OF DETERMINATION
08/06/92

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
University

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Vernon A. Schaffer, Department of Agronomy
Kansas State University, Throckmorton Hall
Manhattan, KS 66506

PHONE *(include area code)*: 913-532-6115

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. [X] Exhibit A, Origin and Breeding History of the Variety
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety.
d. [X] Exhibit D, Additional Description of Variety.
e [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
g. [X] Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
[XX] YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[X] YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[XX] FOUNDATION [XX] REGISTERED [XX] CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)
[XX] NO

19 HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[XX] YES (If "YES," give names of countries and dates)
☐ NO
Breeder's seed distributed during the Fall of 1992 in the United States

20 The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
George E Ham	Associate Director Agricultural Expt. Station	12-15-92
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

Exhibit A

9300123

Origin and Breeding History of the Variety

In 1981 a bulk population of Arlin hard red winter wheat and hard red spring wheat were intercrossed, white seeded segregates were selected from this predominantly red seeded bulk in the F_4 generation. Arlin was then selected as an individual plant, increased, and has been yield tested and its grain milled and baked by the USDA Hard Wheat Quality Laboratory for three years, 1988-1990, under the experimental number KS-SB-369-7.

In 1991 & 1992 Arlin was tested in the Kansas Hard White Yield Trial and the Southern Regional Performance Nursery, and in the Kansas Variety Performance Tests in 1992.

Arlin is uniform, variants are limited to slightly taller plants, darker plants, slightly later plants and awnless or awnletted plants at a frequency of less than 1 in 10,000. Variants with red seed can be found with a frequency up to 0.3%.

The variants as well as typical plants are commercially acceptable. When sexually reproduced the variety and variants remain stable and unchanged in these essential and distinctive characteristics.

1981 Composite cross involving 81 hard red winter and hard red spring wheats

1982 F_1 grown in Manhattan

1983 F_2 bulk, harvested and screened for heavy seed using a gravity table

1984 F_3 bulk, harvested and screened for heavy seed using a gravity table

1985 F_4 bulk, white seed selected by hand after gravity table selection for heavy seed

1986 F_5 space plants

1987 F_6 single rows

1988 F_7 tested in preliminary yield trials

1989 F_8 tested in preliminary yield trials

1990 F_9 tested in the Kansas White Wheat Yield Tests at 7 locations

1991 F_{10} Arlin was tested in the Kansas Intra State Nursery and the Southern Regional Performance Nursery. Evaluated for milling and baking quality by the USDA-ARS Hard Quality Laboratory and the Wheat Quality Council.

1992 F_{11} yield trials at 15 locations in Kansas showed Arlin to have a 3 bu/a yield advantage over Rio Blanco. It was also tested in the Southern Regional Performance Nursery.

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Exhibit B: Novelty Statement

Arlin in an awned, white-chaffed, short semi dwarf hard white wheat with excellent straw strength. It is a very early heading cultivar, 7 days earlier than Scout and 2 days earlier than Karl. Arlin has a waxy pubescence on its head and flag leaf at heading and appears bluish-green. It has a short blocky spike which fills 3 kernels/spikelet.

Arlin is moderately resistant to soilborne borne mosaic and stem rust. It is moderately susceptible to leaf rust, septoria leaf and glume blotch, tan spot, wheat streak mosaic virus and spindle streak mosaic virus. It is susceptible to powdery mildew and Hessian Fly.

Arlin most closely resembles Dodge although it is earlier, shorter and has a blockier head type.

Comparison values to be taken from respective Exhibit C's (see PV 8800034) and used for Journal
AAA 8 Jun 1995

FORM APPROVED: OMB NO. 0581-0055

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN AND SEED DIVISION
BELTSVILLE, MARYLAND 20785

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Kansas Agricultural Experiment Station

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Kansas State University
Waters Hall
Manhattan, KS 66506

FOR OFFICIAL USE ONLY

PVPO NUMBER
9300123

VARIETY NAME OR TEMPORARY DESIGNATION
Arlin

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____

[2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[1] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][2][5] FIRST FLOWERING

[2][3][2] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[ ][7] NO. OF DAYS *EARLIER* THAN .....

[ ][ ] NO. OF DAYS *LATER* THAN .....

[2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:

[ ][7][3] CM. HIGH

[ ][ ] CM. TALLER THAN .....

[2][2] CM. SHORTER THAN .....

[2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES *(Originating from node above ground)*

[1][4] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][4] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][0] CM. LEAF LENGTH *(First leaf below flag leaf)*:

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11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0][6] CM. LENGTH

[1][6] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[2] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush. 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[5] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[1] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[ ][6] MM. LENGTH

[ ][3] MM. WIDTH

[3][1] GM. PER 1000 SEEDS

17. SEED CREASE:

[2] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) _____

[2] LEAF RUST (Races) _____

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[1] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) Soil Borne Mosaic Virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID (Bydv.)

[1] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [1] GP [1] A [1] B [1] C [1] D [1] E [1] F [1] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Dodge	Seed size	Dodge
Leaf size	Dodge	Seed shape	Newton
Leaf color	Dodge	Coleoptile elongation	Newton
Leaf carriage	Dodge	Seedling pigmentation	Newton

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

Exhibit D. Additional Description of Variety

Arlin

Arlin is white chaffed, short with excellent straw strength and has excellent yield potential. Arlin is an early maturing wheat with adequate but not good winter hardiness, and is moderately resistant to Wheat Soil Borne Mosaic Virus and Stem Rust. It is moderately resistant to Leaf Rust. Arlin is moderately susceptible to Septoria Leaf Blotch, Tan Spot, Wheat Streak Mosaic Virus and Spindle Streak Mosaic Virus. It is susceptible to Powdery Mildew and to Hessian Fly. Arlin has better general disease resistance than Rio Blanco but less than Karl. Its disease package is adequate for western Kansas conditions. Arlin's best area of performance will be S.W. Kansas.

Arlin has excellent milling properties, characterized by large high test weight kernels and its protein concentration is equal to Arkan and Eagle. Dough mixing patterns most closely resemble Newton with superior crumb grain and texture compared to Eagle.

Exhibit E. Statement of the Basis of Applicant Ownership

The variety for which Plant Variety Protection is hereby sought was developed by Dr. R.G. Sears, an employee of Kansas State University Experiment Station, all rights to any invention, discovery, or development made by the employee while employed by Kansas State University Experiment Station, were assigned by Kansas State University Experiment Station with no rights of any kind retained by the employees.

9300123

United States Department of Agriculture
Agricultural Marketing Service
Science Division
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Sir/Madam:

SUBJECT: PV Application No. 9300123, HARD RED WINTER WHEAT, 'Arlin'

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is **waived,** except that this waiver shall not apply to breeders seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name(s) of:

Kansas Agricultural Experiment Station

Joyce E Ham
Signature

7-18-95
Date

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